

# Hydraulic Butterflies





# June



## Summer Reading Kickoff Party @ White Farm

Starts at 6pm....stomp rockets, edible constellations, star crafts, photo booth, snacks, summer reading sign-ups, etc.

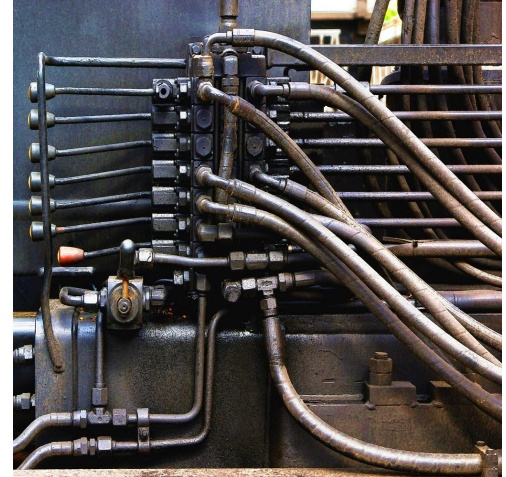
8:00 New Hampshire Astronomical Society will host a short presentation and 8:30 Skywatch (sundown).

Show up at any time. All ages program.



# What is Hydraulics?

Scientific study of liquids moving through pipes and channels, especially as a source of mechanical force or control.



## Can't you just use air?

This is called **pneumatics** but it doesn't work as well because air can be compressed or pushed into a smaller space. But water is very hard to compress.



# Hydraulics with syringes

[Hydraulics](#) (start at 2:09)



# Let's get started!

## You will need.....

Wooden block (6x8) actually 5.5

7 popsicle sticks

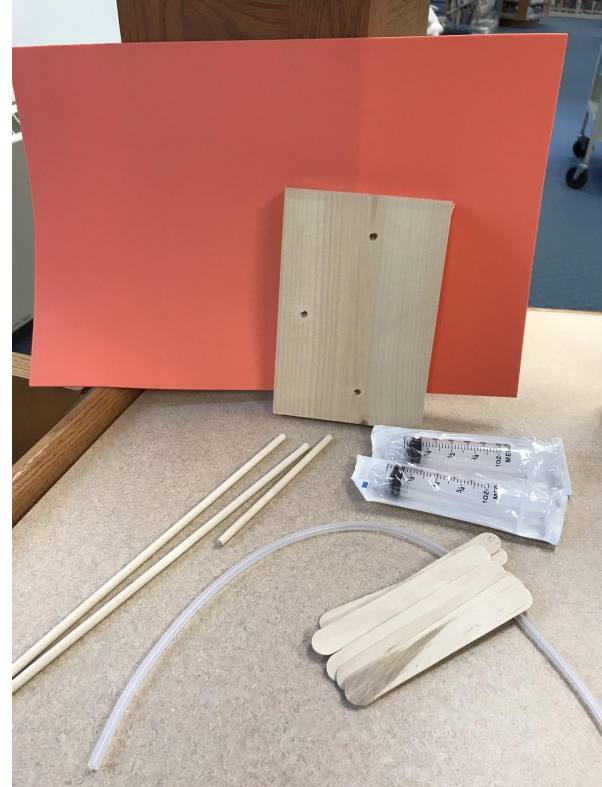
2 long dowels(12 inches), 1 short dowel (6 inches)

2 syringes, tubing (18 inches) (1/8" I.D. x 1/4" O.D. silicone tubing)

Foam

Tape

Glue



# Step 1

Hot glue the dowels.  
The shorter one goes on  
top. The two longer  
ones go on the bottom.  
Make sure they are as  
straight as possible.



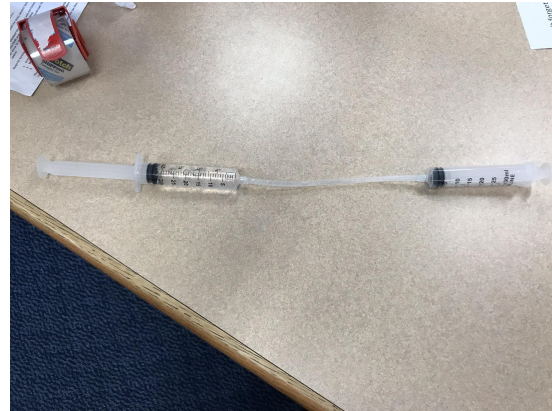
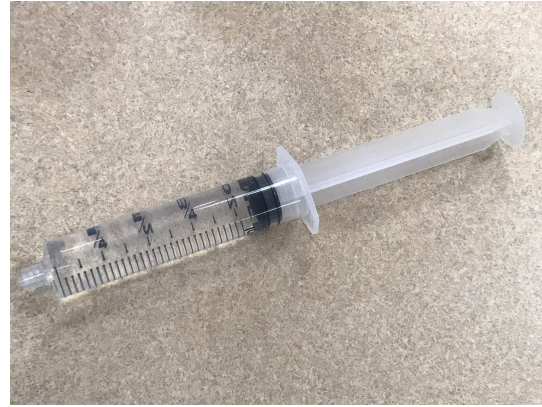
## Step 2

Tape 5 of the popsicle sticks together using scotch tape. Next trace and cut out both wings. Keep the scraps in case someone wants to use them to decorate their butterfly.



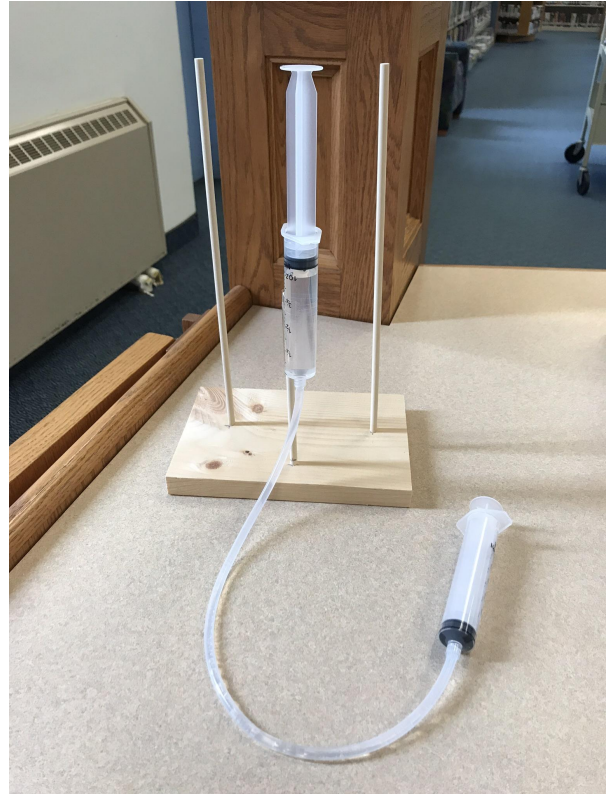
# Step 3

Fill a syringe with water. Try not to get any air bubbles in it. Attach the tubing to it. Push the piston down a little bit. Then try to add more water. The goal is to have as much water as possible in the tubing and the syringe.



# Step 4

Extend one piston fully. Tape the syringe to the small dowel so that the top of the piston lines up with the height of the long dowels.



## Step 5

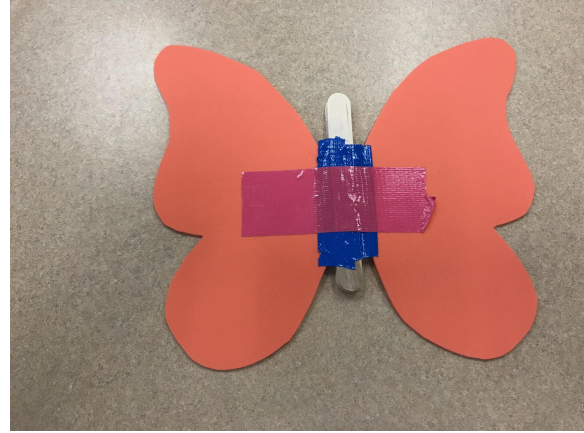
Hot glue the last 2 popsicle sticks to the top of the two long dowels.



## Step 6

Tape the back of your butterfly together. Leave room between the wings and butterfly body so that the wings have room to flap.

**Decorate!**



# Step 7

Hot glue the body of the butterfly to the top of the syringe.

